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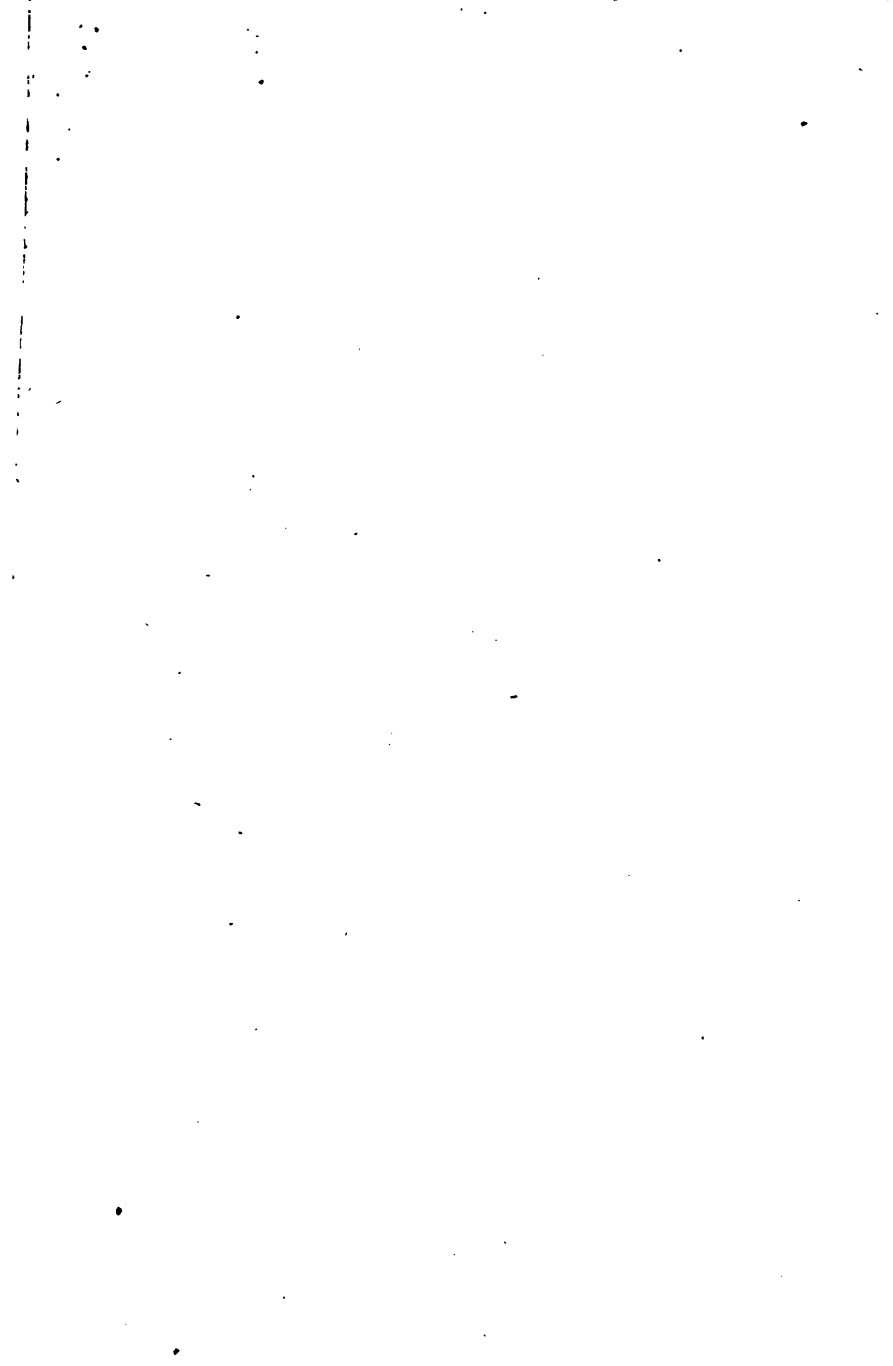


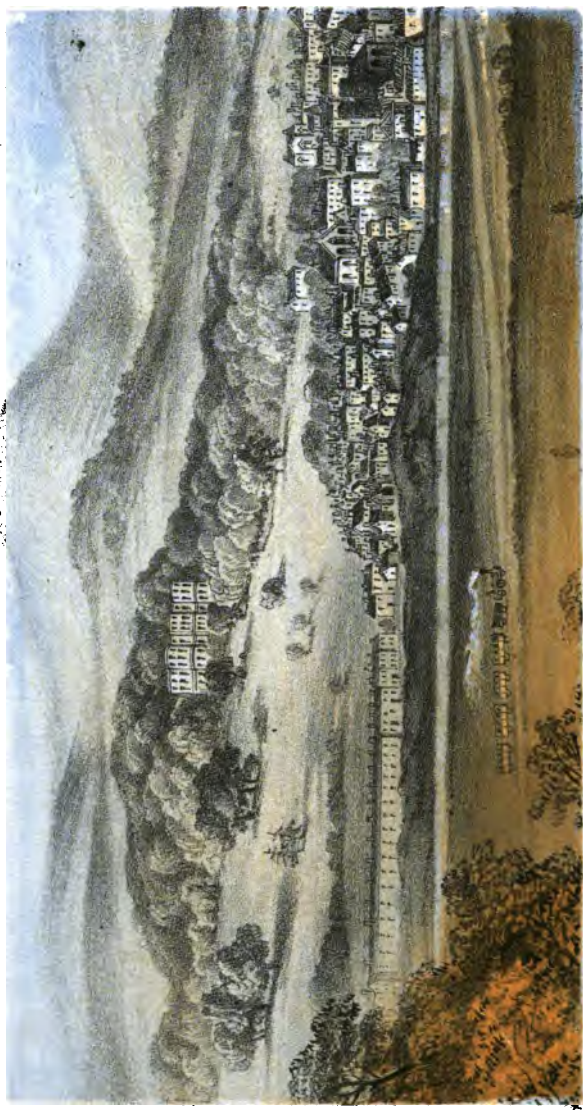
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Gnoll.

Neath.

THE PRINCIPLES  
OF  
COLLEGIATE EDUCATION

DISCUSSED AND ELUCIDATED,

IN A DESCRIPTION OF

GNOLL COLLEGE,

VALE OF NEATH, SOUTH WALES;

A NATIONAL INSTITUTION ADAPTED TO THE  
WANTS OF THE AGE.

“τὸ γὰρ γράμμα ἀποκτείνει,  
τὸ δὲ πνεῦμα ζῶσποιεῖ.”

LONDON:  
EDWARD STANFORD, 6 CHARING CROSS;  
EFFINGHAM WILSON, ROYAL EXCHANGE; WESTERTON, KNIGHTSBRIDGE;  
AND ALL BOOKSELLERS AND RAILWAY STATIONS.

1857.

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*Charles William Eliot fund*

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2.

## THE PROGRAMME ELUCIDATED.

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### NATIONAL OBJECTS.

A GENERAL description of the objects and situation of Gnull College has appeared in the preliminary programme, together with an outline of the scheme of instruction and a statement of the means and arrangements to be employed, as well as of the advantages held forth to the Supporters of the undertaking.

It is not a little remarkable, that, for several years, all the public efforts to promote Education, which have taken any marked effect, have been directed and confined to the instruction of the poorest classes. The rising generation of artizans and workmen has been receiving, through the National, the British, the Sessional, and similar public schools, an education of a peculiarly practical and efficient character; while common soldiers and sailors, and even paupers and criminals, have been enabled to enjoy similar benefits.

To this there can be no objection, and perhaps for the general welfare of the country it was an advantage for improvements in education to begin in such quarters. But the instruction of youths who will have to direct the manufacturing, mercantile, professional, and agricultural operations of the country, and who are the heirs to its Property

and Capital, has, at the same time, risen in but few instances beyond the inadequate routine of the old grammar schools and universities, now rendered comparatively inefficient by the rapid progress of education among the lower classes.

The fact has also been publicly recognised by legislative authority, that a "manufacturing and mercantile, has arisen by the side of the landed, Aristocracy; and is exercising great influence on the public counsels;" and it may be doubted, on the same high authority, whether the intellectual wants of either of those elevated ranks are met by the patched and almost "worn-out" routine of the old systems; indeed it may be safely asserted, that such is not the case, and, if need be, abundant proof will be cited to support this assertion.

Coming events are at length sufficiently foreshadowed, to convince the majority of thoughtful men of the immediate and pressing necessity for sustaining the influence of superior wealth by superior intelligence; and on this account alone, if other motives were wanting, inducement enough is to be found for the prompt establishment of a vigorous system of scientific and practical education for the wealthier classes.

As a proof that there is good ground for anticipating success in such an undertaking, it may suffice to quote the following passage from the Report of the Oxford University Commission, which is believed to be perfectly applicable to this case: "Many persons expect that such a school, when once recognised as an independent branch of academical instruction, and supported by eminent professors in all its departments, will, from the tendency of the age towards the pursuit of material knowledge, be likely to assert its own importance; and they (the Com-

missioners) think therefore that to ensure its success, no more will be needed than to give it independent existence, and full scope for action, without making it compulsory.”\* These opinions are impressed as convictions on the minds of the originators of Gnoll College.

The encouragement with which the programme of Gnoll College has been received by many able men in various parts of the country, affords additional assurance of adequate success. But the complete character of the whole plan seems to be so far beyond any other single institution, and the actual extent of the preparations is so insufficiently represented by the requisite briefness of the programme, that some further elucidation of the details appears to be necessary.

It must be observed, first of all, that Gnoll College is not intended simply to meet the wants of South Wales, as might be supposed from its position. Its objects are National in the broadest sense; and with an appreciation of the desire for the systematic training of young men in practical science, which is existing and growing as much abroad as at home, especially in the British Colonies, in the Spanish-American Republics, and in the East, it is hoped that Gnoll College will, in some degree, help to sustain, by its abundant means of intellectual advancement, the elevated position which Great Britain has gained in the eyes of the world, through the enterprise, the practical talent, and the plodding industry of her sons.

\* The following were the Commissioners who signed this Report:—Bishop Hinds, late Bishop of Norwich; the present Bishop of London; Dr. Jenne, Master of Pembroke College; the Rev. H. G. Liddell, late Head Master of Westminster; Mr. Dampier, M.A.; the Rev. Baden Powell, Savilian Professor of Geometry; and the Rev. G. H. S. Johnson, M.A.

## 3.

## CHOICE OF SITUATION.

THE selection of Gnoll for the site of the College has not been finally determined upon merely from accidental circumstances; and it is believed that it would be impossible to find a locality combining in a greater or even in an equal degree, so many essential advantages.

Equidistant between the east coast of England and the west coast of Ireland, between Scotland on the north and the Channel Islands on the south, it is nearer to the metropolis in time than either of the Universities were till lately, and quite near enough for all useful purposes.

Its proximity to the sea, to ports, harbours, commercial and naval docks, canals, and other important requirements of maritime affairs;—its actual possession of coal mines and quarries;—its intimate connection with great metal and other works;—its facilities of communication with the potteries, the hardware, woollen, and cotton districts, and other centres of national industry;—its immediate agricultural resources, including above 1000 acres of arable and pasture land, and nearly the same quantity of improvable mountain track, about 300 acres of profitable woodland, and above 100 acres of marsh, which will be farmed in connection with the College;—to say nothing of its

remarkably salubrious and picturesque position ;—offer together a combination of actual operations and healthful conditions, the reality of which, in connection with an educational system, seems difficult of apprehension, to men unaccustomed to large transactions ; but a quiet investigation of the details will render their thoroughly practical adaptability, under a well-organised staff, sufficiently evident.

In recounting these advantages, arising from the situation and material conditions of the property, it might be thought that their acquisition for the purposes of the College would involve an outlay of a very formidable amount. But it is not so, for a lease of Gnoll Castle and Park has been obtained for a term of years, at a low rent, renewable, on payment of a fixed fine, for One Thousand years at a nominal rent, upon Trust for the use of the College. This arrangement has been preferred, as affording more security against the alienation of the property than the purchase of the freehold.

## 4.

## SCHEME OF INSTRUCTION.

WHAT is there within the range of knowledge applicable to the chief purposes of life, the principles and fundamental practice of which may not be taught in a College so situated? In the scheme of instruction, previously described in the preliminary programme, a system of classification is presented, which is susceptible at once of the most limited, as well as of the most enlarged application.

Suppose the College should commence with only seventy or eighty students, out of all England, owing to an indisposition on the part of the public to put greater confidence in a new undertaking, however satisfactory its arrangements may actually be. Suppose, too, that some of these young men are intended to become managers of landed property,—others to be engineers or architects, whether civil, naval, or military,—others to be chemists,—others manufacturers of various materials, or mechanists, or miners, or metallurgists, or public functionaries, or merchants. Now, let the scheme be applied to the instruction of this small number of students, according to the several occupations in which they are destined to be engaged.

In the first place, each of the students must have passed through a private examination before his admission into the College, in order that no time should be lost from ignorance of simple elements. The necessity for a preliminary examination is maintained in the Report of the



Oxford University Commission, in which it is said :—" No doubt students come as learners, but not as learners of everything ; and it is precisely to secure learners capable to receive the instruction proper to their age, that an examination at matriculation (on admission) is required." Archbishop Whately also observes on the same question : " If everything else be put on the best possible footing, and that one point be omitted, you will have a plan which will look well on paper, but will never work satisfactorily. The only way is to subject a man to examination prior to his entrance."

Before attention is drawn to the application of the several divisions of the scheme, it appears desirable to advert to the public discussion which the organization of instruction for various professions, and indeed generally, is exciting at this moment. One might almost be led to believe, after an investigation of the various opinions that have been put forth by very high authorities,—each however identified with some special interest,—that if the world does happen to have examples for its guidance on this great question, still no general principle or rule of practice has yet been developed or fully recognised. But is this true? The answer is an emphatic No ! and the proof lies in the very nature of the matter.

Thus, the subjects of education are children, youths, and adults. The child goes to school ; the youth, if the means can be supplied, proceeds to college ; and the adult derives from actual participation in the duties of life, the fruition of his previous and present labours, the enlargement of his experience, and the ripening of his powers. Neither those soldiers who are for colleges only, nor those grammarians who are for schools only, are justifiable in setting up their

own instrument as alone applicable to the production of the perfect result.

In the school, the child should remain until he has learned the rudiments of science, including the ready and correct use of his own language, and its structure in comparison with other tongues, both ancient and modern ; the common use of numbers, and of the relations of form ; the principal features of nature ; the outlines of human history, especially of his own nation ; and imitative drawing. A healthful discipline, concurrent with these pursuits, completes the course. These rudiments will afford ample occupation for the school-boy age, as well as the needful preparation for collegiate exertion.

“Delightful task ! \* \* \* \* \*

To pour the fresh instruction o’er the mind,

To breathe th’ enlivening spirit, and to fix

The generous purpose in the glowing breast.”

Let the grammar schools of England fulfil their true functions, but let them not aim at objects inconsistent with them ; they have to educate, not soldiers, but children, not for the interests of a profession, but for their country.

In like manner, let every parish and borough in the country see that its children be taught. There may be higher, middle, and lower schools, all subject to public inspection, and the religious part of the question would be easily settled in each locality separately, if education were once determined on. The people of one of the most uninformed parts of Hindostan, the N.W. Provinces, have just consented to an increase of 1 per cent. on their taxation for the purpose of education.

A main cause of the misapprehension that has recently confused the public mind, in its laudable endeavours to grasp this question, may be traced to the neglectful and inefficient state of the Universities.

The associated colleges which constitute these still great and famous corporations, having, according to the highest authorities, failed to satisfy the wants of the age, the energy of the nation, unquenched by stubborn resistance, has in many ways undertaken to reshape itself. The great efforts of the Society of Arts afford a long series of successful instances. The School of Arts and Mines in Jermyn Street, and the Schools of Design, and other branches of the Government Department of Practical Science and Art, must also be very favourably mentioned, although the organization as a whole is manifestly imperfect. The improvements in some private academies at the same time deserve to be alluded to. All these demand much more than a passing notice ; but none of them aim at dealing with the full extent of collegiate study, as it is developed in these pages.

In commending that which has proved worthy, the reprehension of evil must not be forgotten. In all great social struggles many mistakes arise in the outset, and so, in this national determination to be educated, much mischief has occurred ; no part of which seems more objectionable than that arising from the attempt made by schools in so many quarters to assume a collegiate style and character. Girls are treated as premature women, and boys in trencher caps wear man's attire ; their minds, moreover, being unduly excited by the professorial method, which requires the reflection of maturer intellect.

This evil will cease when the Colleges do their duty, and

education will then resume its due proportions in every grade.

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Other observations, before quitting this point, are called for by particular views of these discussions.

The originators of the present scheme believe that Colleges for completing the education of youth, and fitting young men for the pursuits of mature age, should be distinguished from the seats of special professions.

That which the Inns of Court might be for lawyers;—the Colleges of Physicians and Surgeons, the Apothecaries' Hall, and the Hospitals, for the medical profession;—the Universities might become for Theologians and Philosophers.

To this point indeed the Universities appear to be rapidly tending; and the greatest benefits might be expected from an adaptation of these famous establishments to objects of this lofty character. At present, according to the Report of the Oxford University Commission, "The education imparted there is not such as to conduce to the advancement in life of many persons, except those intended for the ministry of the Established Church."

Let these seats and centres of profound learning be freed from the uncongenial task of curbing and directing the immature mind of growing youth. The conditions required in the one case are quite incompatible with those involved in the other. Hence the monstrous inconsistencies that have struck deep into the public heart;—the fearful ruin of many a youth, once the hope and trust of parental solicitude;—the absurd attempts at ill-considered restrictions of youthful enjoyment, instead of

the wise regulation of manly pleasures ;—all of which are the results of an incongruous association of the grave with the gay, of grey hairs with young shoulders, of the activity of youth with the repose of age.

The originators of Gnoll College wish to see the Universities roused and raised to the appreciation of a position much higher than they now occupy. From the attempt to stand still, retrogression follows as a necessary consequence ; there must be movement either in the direction of development or of dissolution. The highest aim of Gnoll College is to become an active contributor to the success of Universities so constituted, as well as to the vitality of all other real and genuine operations of society.

On the other hand, colleges, as finishing schools, established for only special purposes, are based on an erroneous principle, fraught with evil consequences.

For instance, what is there in military duties that requires the intervention of another institution between such a college as Gnoll and the realities of a camp ?

Is not systematic drilling on horse, and on foot, and in driving, good for every gentleman and for every man of superior general qualifications ? Cannot mathematics, mechanics, physics, chemistry, natural history, human history, and design, be as easily applied, in a college adapted to the wants of the age, to a class of students intended for the army, as they can be to civil engineers, to agriculturists, to manufacturers, or to others ?

Actual duty in a camp, or in a fortress, or in the field, where all the accessories of a campaign are duly combined, and military operations are really exemplified, can

form the only efficient schools in time of peace for practical soldiers.

Till young men join the army, let them be instructed in the performance of the duties of citizens; and afterwards, as the soldiers of a free people, they will not forget the sympathies due to their country.

It is no part of the national policy to generate a system of castes, nor to foster the natural tendency of all the professions towards a forgetfulness, in the ardent pursuit of their own interests, of their dependence on society at large.

## 5.

## MATHEMATICS.

IN no one of the chief occupations of man is he placed below the necessity for acquiring some mathematical knowledge. The nature and the relations of Number and Form are incidental to the material wants of every individual, and they rise also into intimate association with the investigations of purely mental science. Even the children in pauper schools are now taught the reasons as well as the rules of arithmetic, and the elementary principles of geometry.

“Admission to the Sanctuary of Science”—says Sir John Herschel—“and to the privileges and feelings of a votary, is only to be gained by one means,—a sound and sufficient knowledge of mathematics, the great instrument of all exact inquiry, without which no man can ever make such advances in this or any other of the higher departments of science, as can entitle him to form an independent opinion on any subject of discussion within their range.”

It is, therefore, considered necessary that every student at Gnoll should pass through the preliminary course of Mathematics, whatever his destination may be.

Beyond this, the study of Mathematics will be governed by special considerations, and the professor will be ex-

pected, with the assistance of tutors and special lecturers, to carry the student, through the highest applications of the science, to his special pursuits. The astronomer, the engineer, the architect, the soldier, the topographical surveyor, the actuary, or the statesman, all deal with the same common mathematical principles; and the peculiar application of the science to the practical operations of each, involves no conditions beyond those which are deemed necessary to the most limited development of the scheme, and to the general arrangements of the College.

The practical application of the subjects taught, not merely by means of miniature models or amateur amusements, but by actual operations on an adequate scale, will be a prominent feature of the instruction at Gnosall. Thus, with reference to Mathematics, that branch of study will be applied by the astronomer in the observatory; by the engineer and surveyor in the field, in the working of mines, the quarry, the dock, or in other actual operations; by the agriculturist in the management of the farm; by the chemist in the laboratory; by the mechanist in the workshops, and in machines and apparatus in actual use.

Such direct applications of Mathematics will not only serve to prove the general utility of the science; but they will also tend to obviate the evil consequences to which the human mind is known to be liable, when attention is too closely confined to its more abstruse uses; while they will also lead to a just estimate of its relations to other divisions of human knowledge. It has been remarked by Dr. Abercrombie that "the study of Mathematics does not, as is commonly supposed, necessarily lead to precision in other species of reasoning, and still less to correct investigation in physical or mental science." Aristotle,



indeed, established a maxim which has never been called in question, to this effect,—“ That, except some first principles be taken for granted, there can be neither reason nor reasoning; that it is impossible that every truth should admit of proof, otherwise proof would extend *in infinitum*, which is incompatible with its nature; and that, if ever men attempt to prove a first principle, it is because they are ignorant of the nature of proof.” Thus the true mathematician will not undervalue other sciences, especially that part of Human History which treats of Logic.

With these views, it will be necessary to maintain harmony and co-operation between all the professors occupying the several chairs, so that the specialties of each may be rendered mutually available. The accomplishment of this great object will depend mainly on a successful selection of the professors, and the watchful care of the Resident Executive Council; and success must result in exemplifying the advantages of that Union of scientific action which has been so long felt, in the highest quarters, to be desirable.

6.

## MECHANICS.

7.

## PHYSICS.

THE foregoing remarks on the advantage accruing to every student from passing through the preliminary course of mathematics, are equally applicable to the other divisions of the scheme, viz., to Mechanics, Physics, Chemistry, Natural History, Human History, and Design.

It is unnecessary to advocate the utility of the mechanical or physical sciences to an engineer in any branch of that profession; and every day serves to prove their increasing importance to the agriculturist, not only with regard to machinery, but to the economical use of carts, horses, ploughs, and various other applications of power.

It will be admitted that much time and capital has been wasted by manufacturers, and even by professional chemists, through neglect of the principles of mechanics and physics. Indeed the course of instruction in ordinary schools already recognizes, in a limited degree, the utility of these sciences in the general education of the humblest youths. If one reflects on the immediate application of the Mechanical Arts and the Forces of Nature even in domestic life, it will be obvious, without going further, that some knowledge of these subjects forms an essential part of a superior education. Only those students whose intended pursuits require an introduction to the higher applications of these sciences, will be expected to follow them beyond the preliminary course.

A rigid adherence in these observations to the arrangement of the Scheme of Instruction would have rendered the separation of Mechanics and Physics imperative. But, while for the purposes of systematic study these branches of science require to be kept apart, in a general and popular description of the divisions of the scheme, it appeared convenient to combine them. In referring to the actual application of these sciences, the advantage of this course will be rendered obvious, for the same examples serve to illustrate both.

The Inaugural Lectures to be delivered from each Chair will, however, doubtless indicate, not only the connection of Mechanics and Physics with each other, but also with Mathematics on the one hand, and with the more entertaining divisions of the scheme on the other. For while the application of the principles of number and form join with the natural forces to constitute the basis of these sciences, so on the other hand arises the overwhelming grandeur of nature herself,—in the active volcano,—the stupendous waterfall,—the whirling cyclone,—and the still more mysterious action of organic vitality,—to claim the correlation of Mechanics and Physics with chemistry, with nature, with man, and with productive intelligence.

In connection with the application of materials and the actual operations of the mechanical arts, the various wants of the College will lead to the establishment of workshops on the grounds, and to the employment of skilled artisans; not merely for amateur or instructional purposes, but with due regard to the principles of business, as well as with a view to improvements in the arts and the economical production of articles required for the purposes of

the College. A Forge and Carpenter's shop are already connected with the ordinary farming, mining, and quarrying operations on the estate, and these will be gradually extended. A printing-office will be added for the production of the class-books and other works used in the College, and for which a sale will probably arise. A private electric telegraph will be laid down on the estate, and the students will have the opportunity of engaging in its actual management. The application of mechanical science and the natural forces, such as steam and water power, will be fully employed in connection with agriculture, as well as in the other works on the estate. Steam-ploughing, for instance, and all other improvements, will be tried. The peculiar features of the adjacent sea-board, together with the increasing traffic, are giving rise to various remarkable works in the neighbourhood, among which Mr. Brunel's experiments on the banks of a neighbouring bay will not fail to prove instructive in the study of marine engineering. The flax grown on the farm will be manufactured on the grounds into linen for the service of the establishment. A similar opening will be made for other home products, as the best way of exemplifying the application of raw materials, and training the minds of the students to a ready use of any opportunities that may be offered to them in after life.

Few men of experience can have failed to observe that success in life frequently follows from an apt and prompt use of an apparently accidental occurrence, not necessarily connected with previous pursuits. The objects of Gnull College are comprehensive as well as special, affording scope for the judgment, as well as for the narrow action of needful routine.

## 8.

## CHEMISTRY.

IF Chemistry could be thoroughly understood without a knowledge of the sciences previously mentioned, it might be thought of greater importance than either ; for every element of matter is subject to its penetrating analysis. New chemical discoveries are daily contributing to produce wealth from materials previously of no value, and, in some cases, worse than useless ; of which iodine, benzole, creosote, gun-cotton, collodion, and aluminium are striking examples.

Chemistry inquires into the Elements of matter and the Combinations of which they are susceptible.

The consideration of its raw materials connects this branch of science with Natural History. The chemical investigation of the phenomena which occur in the formation of compound bodies requires also a knowledge of the principles of Mathematics, Mechanics, and Physics ; and the application of Chemistry to the wants and purposes of man, connects this important study with Human History and Design. With Physics especially Chemistry is intimately united ; for all changes in the composition of matter cause, or are caused by, natural forces, which it is the province of Physics to expound.

The study of Chemistry includes :—1, the investigation of the Principles of the science ; 2, the practical Operations of the laboratory ; and 3, the Application of chemical knowledge to various arts, and particularly to the preservation of Health and the cure of Disease.

1. The Principles of Chemistry embrace the laws which regulate the combination of material elements, and the changes which they are capable of undergoing.

2. The Practice of Chemistry embraces :—1, the Natural History of Matter ; 2, its Analysis, including the detection of the elements which constitute the body under examination, and their actual and proportionate quantities ; 3, its Synthesis, or the formation of compounds.

3. Applied Chemistry extends the operations of the science :—1, to various Arts and Manufactures ; 2, to the preservation of Health ; 3, to the preparation of Medicines ; 4, to the explanation of Vital and Morbid processes ; 5, to the preparation and application of manures for the growth of vegetation ; and 6, to the preparation of food for mankind and domesticated animals.

A knowledge of the principles of this science, and some acquaintance with practical manipulation, cannot fail to prove useful to every man, and may be of incalculable importance, whatever his occupation may be. In agriculture, manufactures, engineering, administration, commerce, and design, its influence has been established ; and it is hoped that the Professor of Chemistry and the laboratory at Gnosbury, operating in unison with the collateral chairs, will contribute in some degree to the advancement of this wondrous science, as well as to the instruction of the students.

## 9.

## NATURAL HISTORY.

No educated man, no agriculturist, no manufacturer of mineral, vegetable, or animal materials, no chemist, no merchant, lawyer, or statesman, no artist, no capitalist, should be ignorant of the principal features of Natural History, at least so far as they contribute to supply the wants and comforts of civilized or uncivilized beings.

The most effective way of developing a capacity for the observation of nature anywhere is to begin at home, by exploring and mapping the natural features of the adjacent neighbourhood, and forming a collection of its various Minerals, its Flora, and its Fauna. To this should be added the systematic observation of the Atmosphere, the phenomena of which are so little understood at present. In such work lies the true foundation for any museum, and a most instructive application of natural science. It involves the real teaching of the eye to see, and of the ear to listen; for all the senses will, obviously, become acute and powerful in proportion to their healthful exercise.

A man thus armed will find something to instruct, perhaps something to turn to profit, in every part of the world, and where it may be least expected. Gnull enjoys peculiar facilities for the pursuit of Natural History and

its practical application. The varied Geological Structure of the adjacent country, abounding with coal, iron, and other valuable minerals, occurs in connection with a configuration of the surface, and a difference of soils well adapted to the purposes of instruction. In illustration of the Vegetable Kingdom, the indigenous flora of the hills, the valleys, the plains, the river-side and the sea-shore, the products of the farm and the growth of timber, will be associated with the choicer objects of the gardens, the resources of the library, and the stores of the museum. The gardens are at present large and complete. Pines and grapes of excellent quality are produced ; and whatever may be requisite to facilitate systematic study and render this department efficient will be kept in view.

In like manner the study of the Animal Kingdom will be facilitated as far as it may be deemed necessary. While there will be no occasion for imitating the admirable collection of wild animals in the Zoological Gardens of London, every attention will be paid to the live stock on the farm, which will embrace good examples of the chief varieties. A sufficient number of useful horses will be kept, in order that the students may be duly familiarized with the manly exercises of riding and driving.

The observation of animal life will also be applied to the natural resources of the surrounding country. A right of fishing in the river Neath appertains to the College ; and the breeding of fish,—as an important question of the day, affecting the production of food,—will receive attention. The sea fisheries and the various modes of curing will not be neglected ; and abundant opportunities will occur for studying the lower forms of animal



life, in the curious creatures on the sea-shore, the wonderful beauty and extraordinary forms of which have become a subject of general interest. It may be remembered that this class of animals, in various parts of the world, affords materials of great value, which have long been, in several instances, the sources of a lucrative trade.

In these passing allusions to Natural History, as a subject, the general principles and importance of which should be understood by every well-educated man, it would be an omission to leave the Feathered Tribes wholly unnoticed. The effects of guano alone are sufficiently appreciated in England, to make the natural instruments of its production objects deserving of study.

Connected as the deposit of guano must be with the flight of birds, how little is known of that subject! Now and then travellers have recorded their observation of the passage of birds, sometimes flying at such a height as to be scarcely distinguishable, and only indicating their species by the prolonged descent of a wearied straggler. On other occasions, myriads of birds have suddenly crowded down upon a solitary wild, taking the traveller by surprise, and disturbing his bivouac by their unceasing cries. Whence they come, whither they go, is still a mystery, and will remain so, until education shall have given men generally, sufficient knowledge to appreciate the value of such facts, and shall have taught them the right way to make them known, as well as confidence enough in their own acquirements to be fearless of criticism. The information unknown by science, that lies buried in the breasts of thousands of our countrymen, travellers in every clime, is probably inconceivable.

"The native hue of Resolution  
Is sicklied o'er with the pale cast of Thought,  
And enterprises of great pith and moment  
With this Regard, their currents turn awry,  
And lose the name of Action."

If another illustration of the value of birds be desirable, it may be found in the great trade in eggs between England and the Continent. This is a circumstance, and others occur in these remarks, bearing on a subject of paramount importance, namely, the food of the people. Density of population depends on the means of providing food; and abundance of food, under good government, fosters the increase of the people. An industrious people, with cheap food, yields inexpensive human labour; by which means natural resources become developed and capital is produced. Upon these elements the command of the markets of the world depends, even in a greater degree than on the possession of the best machinery.

There is another class of the Animal Kingdom which calls for some expression of its claims on behalf of the value of Natural History. The Insects, though the least as well as the last in this enumeration, hold an important place, in the circle of useful objects, in the domain of the arts and in the empire of commerce. The silkworm, the cochineal insect, and the bee, are popular examples of productive species. The nature of insects also demands attention on account of the destructive power which many possess. The most durable timber, and the hardest rocks, have been destroyed by their ravages; the agriculturist is often utterly defeated by their attacks; whole countries are rendered impassable for beasts of burden owing to their poisonous bite;

and humanity suffers intolerable evils from these terrible though minute foes.

Natural Geography, with Comparative Anatomy and Physiology, form the theoretical bases of these inquiries. Whilst the first teaches the distribution of all these various objects over the surface of the earth, and the combination of conditions in every locality, Comparative Anatomy investigates the internal structure of all organised bodies, and Comparative Physiology embraces their external features and functions.

Is Natural History, then, a subject to be omitted from the curriculum of a scientific college? or ought it not rather to be said, that a fresh impetus should be given to its study by an apt appreciation of its practical import?

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It may be foreseen that those ultimate operations of Natural History which embrace the investigation of disease in organic bodies and the application of remedies, will probably have to be provided for as a proper and even necessary development of the College. What the effect may be of dealing with this momentous question on the broad basis presented by such a combination of researches into nature, as that for which Gnoll College has been shown to have "ample room and verge enough," remains to be seen. Suffice it to say, that the intellectual forces of the College could not possibly be indifferent, either to a sickly crop of turnips, to murrain in cattle, or to lameness in horses. Much less, then, could it be possible to neglect the health of the labourers on the estate, or to forget the example of the Samaritan, amidst the surrounding population, engaged in hardy toil, and braving

exposure to danger, disease, and death, while occupied in the grand, herculean works from which the students may derive so much real knowledge.

Although the establishment of Hospitals forms no part of the labours involved in the preparations for opening Gnull College, yet, sooner or later, such an addition will, in all probability, require to be made, and will doubtless constitute one of the crowning achievements in this truly National work.

## 10.

## HUMAN HISTORY.

IF there could be any question as to the advantage of studying Natural History in a scientific and practical college, still more likely to be the subject of such a doubt is Human History. Fortunately experience supplies a starting point of authority, in support of this division of the course.

In describing the Polytechnic School of Dresden, Dr. Lyon Playfair says:—"It will be observed, with some surprise, that the native language, German, forms a part of the instruction even in the highest class; and the reason given for this appears to be satisfactory. It was found that mere technical instruction was apt to contract too much the views of the students, and that they had little inclination afterwards to subjects of general interest; but now through the German class, the students are kept interested in history and polite literature, so that they go out from the school not less instructed technologists, but more cultivated men. Instruction in modern languages, besides its technical importance, is also made subservient to this end."

Cicero says:—"Not to know what happened before we were born is to remain always a child; for what were the

life of man, did we not combine present events with the recollection of past ages?"

Koch observes :—"History has very properly been considered as that particular branch of philosophy which teaches, by examples, how men ought to conduct themselves in all situations of life both public and private." \* \*

"It is from history alone, which superadds to our own experience that of other men and of other times, that we learn to conquer prejudices which we have imbibed from education, and which our own experience, often as contracted as our education, tends in general rather to strengthen than to subdue or destroy."

But a simple consideration of the nature of Human History as it is embraced in the scheme of instruction for Gnoll College, will, of itself, probably satisfy most men that there is sufficient reason for giving this subject an adequate share of attention.

By Human History is meant the inquiry into all those matters in which mankind is wholly or essentially concerned. Without intending to define in a dogmatic manner the course which the future Professor of that Chair may deem it advisable to pursue, some remarks of an explanatory character may be permitted.

The foundation of this subject is formed :—1, On a knowledge of Language ; 2, On Comparative Nology ; and 3, On Human Physiology. The first includes the various modes in which thoughts are expressed by speech or by writing. The second deals with the mode of thought itself, as variously exemplified by the chief divisions of the human race. The third describes the features of man, and the distinctive characteristics of different nations and tribes.

Language is the first essential of intellectual communication. But words are insufficient where habits of thought differ, as between the English and Chinese; for words then require to be interpreted with the aid of a just apprehension of the difference that exists between the reasoning processes of both people. This rule admits also of universal application. These mental and lingual differences are associated, in their widest separation especially, with peculiar bodily conformation; and this series of facts follows from no theory, but rather constitutes the science with which a true theory must harmonize.

The language, habits of thought, and distinctive features of a people being known, then its traditions, writings, monuments, coins, and existing customs, may be studied with advantage. What other nations have said about them, may also be examined on the same basis. Deductions from a lower system of inquiry must be estimated at a lower value; but these are the only materials of Human History ordinarily accessible.

The most important branches of Human History are :—  
1, Religion; 2, Administration; and 3, Philosophy.

1. The Sacred Writings generally afford the best indication of the principles and motives which are regarded as the test of national character. The actual influence of the Sacred Books is, however, reflected in the writings of popular Commentators, which often have greater weight with the public at large than the Sacred Text itself. The Law, the Prophets, and the Sacred Writings, with the Talmuds, among the Jews; the Old and New Testaments, among the Christian nations, with the translations and commentaries in vogue amongst each; the writings of Confucius, and the translations of the Buddhist books,

amongst the Chinese ; the Vedas of the Hindoos ; and the Koran of the Mohammedans ; are the chief examples of these primarily important documents.

However deep the Christian's faith may be in the truth of the Bible, however firm his judgment in the marvellous evidence by which its authenticity is supported, yet, in dealing with people of another faith, it is obvious that he can only expect to know them fully by entering into their thoughts and feelings, by appreciating their motives, and leading them by his equal knowledge of their principles, and superior confidence in his own, to the higher views by which he presumes that he himself is actuated.

The history which does not enter into the faiths of nations, and their comparative influence on progress or decadence, cannot be considered complete : nor can those whose minds are directed to international relations be thought fully informed, who have no adequate acquaintance with the religious element.

2. National Administration is an expression of the common will of a people, scarcely less significative than its religious belief. It is to be investigated partly in the written laws of the state ; and partly, often chiefly, in unwritten but well-established customs founded on the common adoption of general principles. The boundaries and divisions of the territory occupied or governed by a nation forms a part of this division of History, under the name of Political Geography ; and here also statistical data may be conveniently considered.

The written laws of a nation are sometimes of a fundamental character ; sometimes also they are adopted, more or less, by several independent states. Of these



kinds are Magna Charta, the Bill of Rights, and the Acts for the Union of the Three Kingdoms; the Roman Law, the Canon Law, the Code Napoleon, the Constitution for the United States of America, the Institutes of Manu, and the writings of Confucius. In studying the administration of any country, attention should be directed, in the first place, to the effect of such general laws.

Above all, the Customs of the people, so far as they materially influence public administration, should be examined. Those of England, for instance, which have placed all local administration under the control and management of the residents who bear the burdens of the state, subject to the judicial authority of the Crown as a check to negligence and abuse; the native village system of India; and the municipal system of the Greeks and Romans, which still partially survives the lawless ravages of the Ottomans in the East, as well as civil anarchy and dissolution in the West.

The paramount importance of a clear insight into the customs of a people, as a basis of administration, is thus illustrated by the learned Savigny: "That which made Rome great, was the active, living, political feeling, which kept the people constantly ready so to renovate the forms of their constitution, that the new merely served to develop the old—the true principle of harmony between the power that would maintain things fixed and that which prompts to movement. \* \* \* The general character of the Romans exhibited itself in a firm adherence to what was transmitted from their ancestors, without yielding to it as a binding rule when it was no longer in harmony with a new and universally prevailing opinion. \* \* If a new legal formula arose, it was im-

mediately connected with an old existing one, which thus communicated to the new one its own fixedness and developments. \* \* From this representation it is clear, that Roman law grew almost entirely out of its internal principles as a law of custom ; and the careful study of its history shows how trifling on the whole was the effect of particular enactments, so long as the law (qy. political activity) existed in a living state."

Principles like these may well be applied to the examination of the actual administration of the United Kingdom, both local and national ; of the Colonies, and of the other territorial acquisitions pertaining to the Imperial Crown.

If additional argument be requisite to prove the necessity for such study, the inquirer can consult Blackstone's Introduction to his Commentaries, in any un mutilated edition, and consider the claims upon his own intelligence involved by the exercise of functions which every Englishman is liable to perform, as for instance those of executors, jurors, churchwardens, mayors, magistrates, consuls, diplomatists, Members of Parliament, and Ministers of State. In ancient Rome, the boys were obliged to learn the twelve tables of the fundamental law by heart ; in the modern United States of America, the federal constitution is the subject of a common school-book.

3. National Philosophy, the pursuit of wisdom or knowledge by different nations, is another distinguishing feature of their condition and character. Philosophy may be observed in some form even amongst savages. The connection of man with spiritual influence, his relations with other human beings, and with surrounding nature, are subjects, the national development of which is of great consequence in Human History.

Religion and administration are, of course, inseparable from this division of the subject, which may be properly regarded as their complement. For under Philosophy may be ranged whatever relates to the study of the Intellect or of Nature; or that which is commonly included under the general designation of the Sciences and Arts. Thus the literature, painting, music, architecture, and manufactures of the Chinese are so many examples of the actual state of that exceedingly numerous people—so many manifestations, by which the foreign student, diplomatist, and merchant may be guided in dealing with them. The same principles apply to the government of conquests, and to the adaptations of internal reforms in a free State; for all changes or movements should be directed with due regard to existing conditions, and their relative weight, without allowing prejudice to warp the judgment.

The Chair of Human History in Gnoll College will, therefore, elucidate the general principles of grammar, of logic, of noology, of rhetoric, of jurisprudence, and government, in the introductory course: it will also direct the study of languages both ancient and modern, of psychology, history, administration, commerce, diplomacy, and oratory, with immediate reference to the intended pursuits of the several students.

The study of Languages has always maintained a place of so much importance in Education, that special allusion to its treatment in Gnoll College appears to be requisite.

The fundamental value of the knowledge of Language, in the pursuit of Human History generally, has been already dwelt upon. In studying the history of those

ancient nations, the influence of which over modern civilization renders their rise, decline, and fall, subjects of supreme interest, the acquisition of the Latin, Greek, and Hebrew languages must evidently be highly desirable, and to some extent essential for every scholar.

And so, with reference to Modern Languages, the development of a capacity for dealing with Foreign Politics, Learning or Commerce must largely depend on linguistic attainments. In Asiatic affairs, the Arabic, Armenian, Persian, Turkish, Hindustani, Malay, Chinese, and Japanese may be required. In Europe, the French is essential; and in a greater or less degree the German, Dutch, Danish, Swedish, Russian, Turkish, Hellenic, Italian, Spanish, and Portuguese. The rising importance of the independent African nations, through the attention which is at length being aroused to the immense natural resources of that little-known continent, will, perhaps, give occasion for the study of the prevailing tongues. Among these the Arabic in the east and north, the Amharic in Abyssinia, the Houssa in Sudan, and the Sechuana in South Africa may be specified.

Details of this precise class can, however, only be provided for as the occasion arises. The Professor will be guided by his judgment rather than by routine, and the Council will aim at efficiency commensurate at least with the expectations of the Public.

## 11.

## DESIGN.

DESIGN is the offspring of Imagination and Science, the combination of varied knowledge and practical skill in the production of innumerable objects of human desire. Guided by the principles of number and form,—by the laws of mechanical art,—by a knowledge of the natural forces,—by analytical appreciation of materials,—by familiarity with nature,—by experience in human affairs, none of which can be reasonably excluded from the instruction to be rendered available at Gnoll,—it must be obvious that the learner may there study Design under advantages of no ordinary kind.

High art may miss the natural characteristics and associations of Greece, Italy, Spain, Flanders, and France ; but it cannot fail to discern in the mountains and valleys, the seas and skies, the people and customs and traditions of home, something through which it will reach the heart and gratify the taste of a generous and patriotic people, and serve to give further development to the English School. High art, however, requires a deeper source of inspiration than a Professorial Chair, and its pursuit is scarcely to be expected amidst the sober realities of Gnoll. Its just appreciation should not, however, be wanting in a

teacher capable of elucidating the principles of perspective, drawing, and colour,—the laws of taste,—and the sentiment of beauty,—as well as the connection of these elements with the Mechanical Arts, Manufactures, Architecture, and Construction generally.

To be able to draw and colour is, in some degree, useful to every man, and of essential importance in several of the chief occupations. Each student will be expected to attend the Introductory Course. The architect and engineer (whether civil, naval, or military), the surveyor, the designer and decorator for various manufactures, and for mechanical and constructive arts, the naturalist, and other students of form and colour, will pursue this final division of the course to an extent and in a direction consistent with their destined pursuits.

## 12.

## THE SOLE OBJECTION.

THE Curriculum or Course of Instruction contained in the Programme of Gnoll College, thus farther partially developed in these pages, might well form the subject of volumes; but enough has probably been said to give a clear idea of its scope and practical nature. The Programme has been submitted to many eminent and scientific men, and has been subjected to much criticism; and the only objection to it, which has come to the knowledge of the originators of the College is, that the plan is too complete to be carried into action.

This objection might be valid in a country deficient in wealth, lacking freedom, possessing few external connections, or offering no employment for practical science. It might be true, if the management were vested in a large body, only partially concerned in its success. It might be admitted, if the contending interests which divide the country on the question of education, could exercise the same provoking influence in this case. It might indeed prevail, if the originators would permit themselves to be exposed to selfish motives, or to the natural desire for personal aggrandizement.

But this sole objection fails: because the Plan is ad-

mitted to be good, and will depend only on its Originators and the Public for its execution ;—because the competency of the Staff will be secured by liberal payments, and abundant materials are provided for its operations ;—because the College provides for the well-understood wants of the wealthy, and its responsible managers are men of experience desiring to be disinterested, and of unblemished reputation, contenting themselves with a clearly-defined reward for their services, and securing all the profits, by Deed of Trust, to the benefit of the College. Indeed, one member of the Council, the actual occupier of Gnoll, known as an agriculturist in all parts of the United Kingdom, has consented to superintend the farming and other external operations of the College purely in an honorary capacity, and until a satisfactory successor can be found for him.

These are facts which the originators, if they consulted their own feelings, would not allow to be expressed ; but these facts constitute the ground of their own confidence, and they believe that, upon due inquiry, they are likely to give equal assurance to the public.



## 13.

## THE STAFF.

THE preceding account of the objects, capabilities, and scheme of instruction at Gnoll, leads to the subject of the organization of a Staff adapted to carry these arrangements into effect.

It is not intended to endeavour to carry away the judgment of the public by a long array of influential names. Where a sound foundation is sought after, the application of general principles, concurring with adequate experience, and appealing to common sense, may justly claim assent, under a sort of algebraical notation, expressed by blanks or by the letters of the alphabet; and the absence of names will perhaps effectually serve to fix the attention on the fundamental points of the system.

It must not be thought that, in omitting names in this instance, the real value of personal weight is intended to be overlooked; for the contrary is expressed by the insertion of the accompanying list of nobility and gentry, bishops and clergy, members of both Houses of Parliament, magistrates, owners of property, and manufacturers, who, in the immediate neighbourhood of Gnoll, have extended their generous and welcome encouragement to the instigator of this arduous task.

With such a list of names from one county, what an array of Presidents, Vice-Presidents, Governors, and Directors (really irresponsible, however) might not have been displayed, if the United Kingdom had been canvassed after the usual method.

In fact, it would not be wise to select the Staff until the period for opening the College draws nearer, although numerous candidates, of very high academical and professional standing, principally from Oxford and Cambridge, have placed their talents at the disposal of the College. For, in the first place, as the opening of the College is deferred till October next, to give ample time for the necessary preparations, it is thought desirable not to make engagements prematurely, in case some other learned teachers, possibly still better qualified, should in the meantime come forward. And further, the existing position of some of the candidates would, it appears, render the use of their names at present objectionable and inconvenient.

The organization of the staff will, however, it is believed, bear examination on its own intrinsic merits; and, if the plan be approved, it may not be too presumptuous on the part of the originators to claim some confidence in their assurance of being able to engage thoroughly competent individuals to carry it out.

The Staff will embrace :—

The Resident Executive Council ;

The Examiners ;

Resident Professors ;

Special Lecturers ;

Resident Tutors ;

Medical Officer ;

Auditor ;

Skilled Artizans ;

And, of course, the necessary complement of clerks, servants, and labourers.

*Executive Council.*—The three originators of the College will constitute the first Council, and undertake the responsibility of its management, under a tripartite division of the duties, suited to their respective qualifications.

*Examiners.*—The most ample experience on the question of Examination has been recently collected by Her Majesty's Commissioners appointed to inquire into the University of Oxford, and in other reports presented to Her Majesty's Government. Perhaps the most striking example offered by these authoritative investigations on the subject of Examinations, is afforded by the evidence of Dr. Liebig, who said, with reference to the now famous German University of Giessen : " For twenty-seven years no medical student at Giessen visited the laboratory ; but immediately after the Examination was introduced, the students pursued their studies with zeal and ardour. I repeat it, if no Examination is introduced, the best schemes will fail. Introduce the Examination, and all the rest follows of itself."

The principle of Examination being adopted, it becomes obvious, that in addition to those whose work of teaching and learning is combined to give occasion for it, there should be some external element to secure freshness, progress, and confidence. It is therefore proposed to engage a special Examiner for each division of the scheme ; who, with the Professor and one of the Tutors, shall conduct an Annual Examination ; and they together will award the

Honorary Distinctions to those students who pass the Final Examination with credit.

It is hoped that those men of science in whom the public have the greatest confidence will so appreciate the importance and truthfulness of Gnoll College, and the necessity for its establishment, as to *volunteer* some portion of their time and thought to this pre-eminent office.

The Examiners will be invited to make a preliminary visit at the commencement of each academical year, beginning in October. They will then have the opportunity of advising with the Resident Staff; and it will be a matter of separate consideration in each case, whether the inaugural lecture shall be delivered by the Examiner on that occasion, or by the Resident Professor. One other visit will be required from the Examiners at the end of each academical year, in the month of July, when they will be expected to join in the Examinations. Thus they will be enabled to judge of the results of the proceedings on which they have been consulted, and to form an opinion on the competency of all parties concerned.

For each of these two visits the Examiners will be paid the sum of One Hundred Guineas, and if at any other time they may feel disposed to visit Gnoll, either for relaxation or observation, they will be always welcomed and hospitably entertained. In this way the originators of Gnoll propose to use the means entrusted to them, in honouring the leading spirits of the country, and in securing their co-operation for the benefit of the commonweal.

*Resident Professors.*—This scientific corps will be selected from among those rising men of acknowledged attainments and power of expression, who have already

volunteered for the duty, or who may yet do so. The Council will be responsible, under adequate advice, for their appointment, efficiency, and retirement. A separate professor will be attached to each division of the scheme, viz. :—

Mathematics,  
Mechanics,  
Physics,  
Chemistry,  
Natural History,  
Human History,  
Design.

The sum of 500*l.* per annum will be paid to each professor, as the Council believe that services of this responsible and commanding character should be rewarded by an income commensurate with the moderate expectations of married gentlemen.

The duties of the professors, to be engaged at the opening of the College, will be progressive. Each professor will be required to deliver one lecture weekly, during the continuation of the introductory course, which will probably occupy two or three terms.

There will thus be at first one lecture by each of the seven professors weekly, and one of the series will be delivered either as an afternoon or evening lecture.

The rest of the professor's working hours, during the introductory period, will be required—to visit the classrooms occasionally, while the tutors are engaged with the students in digesting the lectures; to make preparations for future claims upon him; to complete his lectures, class-books, diagrams, maps, instruments, and apparatus

of every kind, in doing which he will be supplied with means and qualified assistance.

In the second year the admission of fresh students will require each professor to repeat his preliminary course, as well as to proceed with the intermediate course, and so on, till three lectures weekly will be requisite from each, so as to provide for the new students of each year. While, however, the number of lectures increases, they will be mainly repetitive, and the preparatory work will be less needful.

It is unnecessary to proceed with the explanation of the duties of this important part of the staff further than to state, that the effect of this plan will be to embrace the complete course of each division in Ninety Lectures, or Six Hundred and Thirty for the whole scheme, exclusive of special courses. Enough has been now said to indicate the nature of the arrangements which the Council propose to adopt in this instance, with the purpose of giving effect to the scheme, and maintaining method in its development.

*Special Lecturers.*—Among the aids alluded to in describing the professorial duties, Special Lecturers will take the first rank; and here may be enumerated some of the subjects that may require their practical elucidation, depending, of course, on the destination of the students.

A. Astronomy—Cosmical.

„ Nautical.

„ Geographical.

Surveying—Trigonometrical.

„ Military.

Surveying—Nautical.

„ Engineering.

„ Agricultural.

„ Architectural.

Book-keeping—Farming.

„ Mining.

„ Mercantile.

B. Mechanical Appliances—

Tools.

Arms.

Instruments.

Implements.

Machines.

Engines.

Tackle, Apparatus, and Contrivances.

C. Physical Arts—

Electrical.

Magnetical.

Optical.

Hydraulic, &c.

D. Chemical Arts.

Bleaching, Dyeing, Fermenting, Lighting,  
Tanning, Soap-making, &c.

E. Mineralogy—

Mining, Quarrying, and Streaming.

Metallurgy.

Mineral Arts :—Pottery, Glass, &c.

Metallic Arts :—Casting, Cutlery, Instruments, &c.

## Agriculture.

Planting.

Horticulture.

Grazing.

Veterinary Medicine.

## Vegetable Manufactures.

Cotton, Linen, Paper, Rope, Cabinet Work,  
Foods, &c.

## Animal Manufactures.

Woollen, Hair, Bristles, Skins, Horn, Bone,  
Gelatine, &c.

## F. Political Sciences—

Geography.

Languages.

Music.

Law.

Diplomacy.

Commerce.

Oratory.

## G. Constructive Arts—

Buildings and Works ; ecclesiastical, civil,  
and military.

Ships and Boats.

Carriages.

Delineative Arts.

Formative Arts.

In endeavouring to reduce some of the numerous practical applications of science into the preceding groups, by no means to be considered complete, it is only intended to suggest certain combinations that appear likely to facili-



tate systematic study. Teachers enjoying special qualifications must be accepted for what they will do, rather than for what they might do; and it can only be hoped that if the demand be created, the supply will follow.

*Resident Tutors.*—Very much attention has been given to the question of the employment and proper functions of Tutors. In the old Universities, inefficiency in other quarters has given rise to a class of Tutors who constitute the vital part of a decaying system, and who have consequently assumed functions, that would be inconsistent with their true relations in a well-ordered economy. Archbishop Whately calls the University Tutors—"the Crutches of our infirm system." Mr. Grove "would seek to attain what would be beneficial in it (tutorial instruction) by the increased number, efficiency, and remuneration of College Tutors."

But here again, not to multiply quotations, a simple apprehension of the object in view will most effectually elicit its true treatment. While the Professor's duties call for the highest order of learning, thought, and expression, as well as abundant opportunity for their exercise, the Tutor's duties involve those qualities in a sufficient degree to give him a clear apprehension of the Professor's objects—ability to analyse and digest his lectures—capacity for explaining whatever may not be clearly discerned by the student—as well as skill and authority to direct the studies of his class. In some of the divisions it might prove an advantage if the Tutor could undertake the development of some particular part of his subject in special lectures; but such points as this are of minor importance, and can now only be glanced at. Between the Professor and the Tutor, no less than between

the Tutor and the Student, there must be the utmost confidence and intimacy in their respective collegiate relations.

Mr. Jowett observes, "It is neither to a system of Professors nor Tutors that I should trust for improving the instruction of the universities, but to both together, acting in connection with each other."

The Tutors will be paid an average sum of 200*l.* a-year, as an adequate income for a studious young man, and that class will be preferred. An ample number will be appointed, according to the requirements of each Chair and the number of Students. Vacancies in the Chairs will be filled from their ranks, unless paramount scientific claims from without shall interfere.

*Skilled Artizans.*—Chemical works, metallic and other manufactures, construction of instruments, implements and apparatus, quarrying, building, engineering, printing, bookbinding, engraving,—in these and other occupations connected with the property and proceedings of the College, it is intended to provide profitable employment to a greater or less extent, as its plans are developed. The works in the neighbourhood will also doubtless contribute largely towards the same end, namely, the insight into, and more or less actual acquaintance of the Student with the practical application of his studies.

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In addition to the liberal terms on which the Staff will be engaged, the Council are contemplating plans for rendering the prosperity of the College still further conducive to the personal interests of all the Instructors. Success, it is felt, ought to be recognized by commen-

surate reward. The Council are of opinion, also, that the publication of the Transactions will materially contribute to keep the labours and reputation of the Staff at Gnoll College before the Scientific World: for that philosophy is held to be the wisest, which recommends that the smallest light should be fully exposed to view, instead of being partly veiled or wholly extinguished.

In making the first appointments and filling up future vacancies on the Staff, the originators depend especially on Volunteers; and all who feel interest in the objects of Gnoll College, and capacity to fulfil a part in carrying them out, are freely invited to communicate their wishes and qualifications to the Council; and the Council trust that, with competent advice, they will be enabled to make such a selection as will command Public Confidence.

## 14.

## THE STUDENTS.

THE age recommended for the admission of students into Gnoll College is 18 years, and the completion of the course of instruction is fixed at three years, so that, entering at 18, the student would finish his academical education and be fully qualified to enter on the business of life, when he attains to legal manhood.

This suggestion is not, however, regarded as an arbitrary rule ; but no youth, however precocious his talents, will be admitted until he is 16 years old ; and should any fail in passing the preliminary examination at 18, another opportunity will be afforded in the following year.

The originators do not think it necessary at present to define specific courses of study adapted to special pursuits. Certain details applicable to various important avocations will doubtless be dependent on the demands to be made on the College by the numbers and destinations of the actual students.

The following incidental operations will perhaps help to give some further idea of the means that may be rendered

available for practical instruction in connection with the several divisions or combinations of the scheme.

New inventions or designs will be investigated.

Researches into the utilization of waste products will be made. About 12,000*l.* worth of sulphur is believed, by the smelters themselves, to be thrown away every month through the chimneys of the copper works around Swansea, **about** ten miles from the College.

A railway (the **South Wales** mineral line) is just commenced **through** the Gnoll Estate, extending for **about** twelve miles from Britton Ferry into the **mountains**. It will be two years in making. Other lines are also being made. The managers of railways near at hand have offered to assist in rendering the students competent to engage in railway affairs.

New coal seams will be opened along the line, and coal may be found all over the property.

Docks are now being made at Britton Ferry, within three miles of Gnoll, and they will not be completed for two or three years.

Marine engineering.—The peculiar features of the adjacent coast, and the increasing traffic of the neighbourhood, are giving rise to various remarkable works.

The rising importance of the adjacent harbour of Milford Haven, in connection with the new steam-packet route to Cork, and as the home-port of the Great Eastern Steamship, can scarcely be allowed to pass without notice.

Copper works on a large scale are about to be built, with all the recent improvements, within a few miles of Gnoll.

A canal is about to be made to the new copper works; also a railway.

Water-power to a considerable extent exists on the grounds, and is now applied to thrashing, &c., on the farm. There is a water-fall, above 100 feet in height, within the grounds.

Malt will be made, and brewing for the establishment will be carried on.

Farming in various parts of the United Kingdom will be rendered accessible to students desirous of acquiring a general knowledge of agriculture; and arrangements will be made to enable a student, before the completion of the three years and without extra cost, to observe the practice in the red sandstone, chalk, oolite, wealden, or other formations, according to his intended destination.

Models of farm buildings will be devised and constructed by the students on a large scale to illustrate various systems of management in the clearest manner.

Reclamation of land.—Large tracts of land within a few miles of Gnoll are now being covered by the deposit of sand thrown up by the sea. Arrangements have been made to examine the action of this phenomenon with a view to providing a remedy.

Stock from various parts of the kingdom will be bought, particularly the various breeds suited to the neighbourhood, and also improved imple-

ments ; and an annual sale will take place both of live stock, and of implements, as well as of seed, corn, &c.

Stable management and all matters connected with it will have special attention.

Manures will be tried and experimented upon, and the results on other geological formations compared ; the influence of the atmosphere will also be recorded.

Each of the students will be made responsible for observing and reporting upon some specific object ; and lectures will be occasionally delivered by them, both at the College and at Neath, so as to accustom them to public speaking.

Irrigation will be extensively applied.

Exhibitions.—The West of England Show will take place in the neighbouring town of Cardiff in 1859.

The farm will supply the College with meat, vegetables, and bread. The grass land near Neath lets at 5*l.* to 6*l.* per acre, and the upper mountain land for less than 1*s.* Draining to a vast extent is required in the surrounding country.

Flax will be grown largely, as the soil and climate are favourable.

Sheep will be reared, and the utilization of their products illustrated.

Ammoniacal manures from coal will be experimented upon, with reference to the application of small coal to agriculture in coal districts.

The farm accounts will be kept by the agricultural students.

Woodland to some extent, now about 300 acres, will be under management.

Undeveloped resources will be reported on by the students, under competent management, over a tract of 20,000 acres, by arrangement with the neighbouring gentry; and maps will be prepared by the students to show the various conditions of the property, together with plans of the buildings and proposed improvements.

Bricks and tiles will be manufactured on a rather large scale. Cements and mortars of all kinds will also be made.

Timber will be prepared to resist damp, and the strength of timber and of other materials will be tested.

The parish Roads will be reported on and taken in hand by the College, if practicable, to show the best mode of making them and of keeping them in repair.

Works and factories of various kinds will be rendered accessible to the students, and visited, in company with a tutor, for a sufficient time to show the relation between practice and theory.

Navigation will be taught practically, and short voyages will be made for that purpose. Boating can be practised on the lakes in the grounds.

Quarrying will be practised on a large and valuable stone property, under the direction of the College, and there are quarries in various parts of the estate and farm.

Diagrams, maps, and apparatus required to illustrate the lectures will, as far as practicable, be made in



the College; and Drawing will be practised, always with reference to the intended pursuits of the student.

Railway station.—A new first-class station will be built on the Gnoll Estate within twenty minutes' walk of the College.

The County Reformatory for Juvenile Prisoners has just been established on the estate, with a farm of 250 acres, and it will afford an interesting and important subject of attention.

Pauperism.—Attention will be given to the best mode of dealing with the pauper population, and endeavours will be made to reduce the local rate.

Social relations.—Scientific, Statistical, and Administrative investigations into the state of the county and its population will generally afford practical work for the Students.

The Students will be prepared to pass Competitive Examinations for Public Appointments.

In limiting the first admissions to 200, the originators are equally prepared to deal effectively, in October, with a much smaller number, and they will also provide for an increase at the commencement of the ensuing academical years.

Each Student will have a separate apartment. The table will be supplied on a most liberal scale, and the household arrangements generally will be conducted on a par with the habits and manners of the best society. No restrictions will be imposed, but such as are necessary for the efficiency of the College, the maintenance of order, and

the general comfort of the entire body. Guided by large experience, and habituated to control, the Council apprehend no insurmountable difficulty in maintaining wisely-regulated freedom, and checking any disposition to abuse.

Having regard to the actual pursuits embraced within the wide range of the College, only wide enough, however, to provide for the educational wants of society, the originators cannot hesitate to deal as boldly with the recreation and domestic enjoyment of the students as with their labours. Thus it would be an absurd restriction to limit the use of horses to the agriculturists, who would themselves be poorly fitted for a respectable position in that occupation, if unaccustomed to the nature and management of the horse. Every student may therefore, if he pleases, take equestrian exercise ; and cavalry drill may be taught sufficiently for introductory purposes.

So also with regard to shooting, which carries with it rifle-practice and the study of projectiles. Infantry drill and gymnastics may also be learned under experienced direction. There is a fine cricket-ground in the park. The River Neath supplies excellent fishing. Boating may be practised on lakes in the grounds, which are of considerable extent, and free from danger. Here also skating may be safely enjoyed in the winter. As a further step in these favourite amusements of a maritime people, the adjacent Bristol Channel affords ample scope, at proper times, for students delighting in the sea, or for those studying navigation, fisheries, shipping, and all that pertains to nautical affairs.

In the house, every rational pleasure may have scope, so that the studies, general comfort, and good conduct be not encroached upon.

The Library and Museum will be opened and lighted up, and the Observatory will be accessible, under regulations, till a reasonable hour at night. The Gardens and Park are also full of pleasurable resources. Singing and Music at stated times may be practised. Athletic recreations will be encouraged. Open-air and indoor games may be played; but gambling will be severely censured and punished. The reading of Original Papers by the students, to be followed by discussions, will be encouraged; and public Soirées will occasionally be given.

Through the attentive care of the medical officer, and the general feeling that will be cultivated, the Council hope that improprieties or excess of any kind will seldom arise, and every precaution will be taken to check and put down any mischief that may be detected.

The Annual Examinations will be of a public character, and prizes will be awarded. On the examination of students who have completed the course, honorary distinctions will be conferred on the most deserving.

Travelling and other Fellowships, with ample emolument, will also be granted, when the funds admit of such rewards.

Arrangements will be made to accommodate students during the Vacations, and opportunities will also be afforded to them for Excursions, at home and abroad, during the long vacation, in company with some of the Staff, on payment of expenses.

The expense of enjoying these intellectual and social advantages, has been regulated by an appreciation of what is wanted to sustain and expand the intellect, the industry, and the capital of the country, as well as by a

knowledge of the actual outlay to which wealthy parents commonly submit for an amount of instruction which (it may be fairly said) will not bear comparison with the Curriculum of Gnoll College.

The nomination fee of One Hundred Guineas may be applied in payment of the fees for the final terms. Thus this preliminary payment, while it serves to assist in carrying out the large provision that must be made for a work of this magnitude, will also secure the College against the loss to which it would otherwise be liable from abrupt departures, and serve as a strong inducement to complete the three years' course.

The economy of time in Gnoll College, in comparison with its waste in the Old Universities, will be obvious. Every student will be expected to attend at least 70 lectures in each term, exclusive of Tutoring and Examination. Thus the vacations may be well earned, and prove needful to recruit the powers of both student and teacher.

The economy of money in a College undertaking every needful expense (except travelling, ordinary vacations, and clothing) at 210*l.* per annum, or 70*l.* per term, without any Extra whatever, may also be rendered clear enough. Few who have paid collegiate, or even academic costs, will require any explanation of this statement.

The economy of time and money must also be measured — by the comparative capabilities of Gnoll College;—by the value of the practical qualifications which it undertakes to foster and develop;—and by the habits which its discipline will watch over and regulate. The young men who complete their education at Gnoll will be fitted to enter at once on the arena of actual life as

qualified and salaried assistants, if not as actual managers ; instead of being required to pay premiums, not unfrequently as high as 1000*l.*, for such professional instruction as they may be able to pick up, with little guidance and less system, in the course of business. It is understood that the leading practitioners of the chief professions prefer paying for competent assistants, to receiving premiums, however large, with unqualified pupils. With the groundwork of practical knowledge which the students at Gnoll will have the opportunity of acquiring, there is no reason why, with adequate ability, they may not aim at the highest distinctions.

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The recognition of Religious Principles in the discipline of the College has received most anxious consideration, and an arrangement has been devised, which appears to be most consistent with the general practice of the Church of England, and with the actual position of other influential religious bodies. The Rector of the parish will take upon himself the religious oversight of those students who are entered as members of the Established Church, and similar arrangements will be entered into on behalf of the other students whose creeds may be represented by ministers in the neighbourhood. Observing the present state of opinion in the Church of England, the recent admission of Dissenters into the Universities of Oxford and Cambridge, and the maintenance of the Maynooth Grant by Parliament, no other solution of this important question appears in this instance to be equally practicable.

It has been supposed by some, who are very friendly to the College, that it would be surer of securing confi-

dence if more especially connected with the Established Church. But the grievously immoral state of certain public schools, under clerical superintendence, has been repeatedly exposed, and is a proof that no merely formal adoption of a special religious designation, even with resident ministers, is any security for good management, or any protection against the worst vices. It is, on the contrary, too likely to prove (apart from more essential qualifications) a slumbering substitute for that constant watchfulness which is the only preventive. By the common law of England, colleges are lay corporations; and the assumption of an ecclesiastical character only serves to narrow their usefulness, while it can scarcely be pretended to offer any effectual security for the promotion of piety and learning. The Council of Gnosall College hold themselves personally responsible for its discipline; and arrangements will be made, in concert with the ministers of religion, for the proper observance of the Sunday, and the usual religious regulations of a well-conducted and comfortable home.

## 15.

## FINANCIAL ARRANGEMENTS.

THE enduring strength and progress of Groll College is expected to be maintained in a great degree by the rectitude and independence of its Financial Arrangements. It is quite unnecessary to exhibit the estimates on which the work is proceeding, as there is nothing of a joint-stock or proprietary character in it. The Council have the property in possession, and are proceeding with the requisite alterations and additions.

The plans for the College being now presented to the public in a digested shape, it may be fairly said that there is nothing to prevent the opening at the appointed time in October next. The Council have voluntarily secured the revenues and future property of the College to its sole use and benefit; and beyond the purchase of the rights of nomination, and the prepayment of the fees, which are common privileges of the collegiate system, they only ask for the confidence reposed in ordinary schools.

The Trust-Deed, which may be examined by any interested applicant, recites the terms of the lease; alludes to the private declaration in which the originators have

expressed their own fundamental views ; and expresses the concurrence of the originators in the following articles :—

1. The transfer of the lease of Gnoll Castle upon Trust for the uses of the College.
2. The appointment of the originators as the first Executive Council.
3. The daily entry of all items of account, the audit of the books by a Public Accountant, and facilities of inspection.
4. The payment of all monies to the banking-house of Jones Loyd and Co.
5. The application of the monies to
  - a.* Rent, salaries, debts, and ascertained fees.
  - b.* Improvement of the College.
  - c.* Prizes, fellowships, free scholarships, and a reserved fund.
6. The purchase of the lease of the College for 1000 years at a nominal rent.



## 16.

## RIGHTS OF NOMINATION.

HAVING thus endeavoured to describe and explain the objects, capabilities, scheme of instruction, staff, financial resources, and securities of Gnull College, the originators have now only to offer the opportunity of placing young men at such an institution, at the opening of the College in October next.

Forms of application for Rights of Nomination will be forwarded on applying by letter to "Mr. W. Bullock Webster, Gnull, Vale of Neath, South Wales;" and Messrs. Jones Loyd and Company, Bankers, Lothbury, London, are authorized to issue receipts for every payment of One Hundred Guineas (105*l.*) to the credit of the Council of Gnull College.

The Receipts issued by the Bankers will be numbered consecutively, and Priority of Admission after Examination will be governed thereby. The several purposes to which this payment may be applied are described in the Programme, and also in the Appendix.

## 17.

## LIFE ADMISSIONS.

THE originators feel convinced that the broad and liberal policy which they have adopted, will be appreciated to the full extent to which it can be thoroughly carried out. It has therefore been resolved to set up no barriers to the usefulness of the College, that may not be absolutely necessary to maintain its specific objects.

Exclusive Admissions to the special Lectures, Library, Museum, Observatory, Gardens, and Grounds of Gnell College, will be granted, for life, to persons above twenty-one years of age, on payment of One Hundred Guineas each; and the Holders will also be entitled to the published Transactions of the College.

Admission tickets for special lectures will occasionally be distributed gratuitously to the holders of Life Admissions residing in the neighbourhood, for the use of workmen and others.

Thus all ranks and classes of society will be brought into immediate contact with the intellectual pursuits of this truly National Institution, and duly participate in its benefits.

W. BULLOCK WEBSTER,	}	<i>Resident Executive Council.</i>
LEWIS C. HERTSLET,		
TRELAWNY SAUNDERS,		

*Form of Note to Messrs. Jones Loyd and Co., Bankers, London,  
to whom all Monies for the use of Gnull College must be paid.*

[Insert Address and Date.]

GENTLEMEN,

I have requested my Bankers to pay you [or, I beg to enclose  
you a cheque for] (as the case may be) the sum of \_\_\_\_\_

to be credited to the account of the "Council of Gnull College," for  
a Right of Nomination, (or for a Life Admission, or whatever the  
case may be,) and I await the acknowledgment thereof in due  
course.

I am, Gentlemen,  
Your obedient Servant,

To Messrs. Jones Loyd & Co.,  
Bankers, London.

---

*(Form of Bankers' Receipt.)*

Consecutive  
Number.



London, Lothbury,

\_\_\_\_\_ 185 .

Received of \_\_\_\_\_

the sum of One Hundred Guineas, to the credit of the "Council of  
Gnull College," for a Right of \_\_\_\_\_

For JONES LOYD and Co.,

£105.


*(The formal document will be forwarded by the Council.)*

(*Form of Right of Nomination and Regulations for Admission.*)

## RIGHT OF NOMINATION.

The Executive Council of Gnull College hereby acknowledge the Receipt of One Hundred Guineas (£105), paid to the credit of the said Council, into the Bank of Messrs. Jones Loyd and Co., London, by \_\_\_\_\_

for a Right of Nomination to one Studentship in Gnull College, which is hereby granted, subject to the Regulations attached.

Number _____		} Members of the Council.
Dated _____		
Accountant _____		

### *Regulations governing the exercise of the Right of Nomination.*

1. The Entrance of a student can only be allowed at the commencement of each academical year, in the month of October, on the production of a Right of Nomination. He must also have passed a private preliminary examination before Examiners to be appointed by the Council. The Examiners may be selected from qualified persons approved by the Council residing in the Candidate's neighbourhood, who will be paid a fee by the College.

2. Notice of Application for the Preliminary Examination must be sent to the Council at the College, on or before September 1, in each year, otherwise the application may not be granted until the beginning of the next academical year.

3. The Certificates of the Examiners must be sent by successful Candidates to the Council, on or before \_\_\_\_\_

4. A Right of Admission will be issued to a successful Candidate, according to the numerical priority of the Right of Nomination, in exchange for the Examiners' Certificate, and the Right of Nomination. Only 200 can be admitted on the opening of the College in October, 1857, as stated in the programme. The Fee for board, residence, and instruction (70*l.*) must be paid into the bankers *at the beginning of each term*; and the student must arrive at the College on the day, or day before, the studies commence; otherwise he will be liable to lose marks for attendance in the lecture and class rooms, &c.

5. The payment for the Right of Nomination will be applicable as part of the Fees for the last two terms of the three years' course, or it will be forfeited to the College, if the entire course be not completed; but if all the fees be paid, the Right will be renewed at the end of the course without further payment.

*(Form of Life Admission.)***LIFE ADMISSION.**

The Executive Council of Gnull College hereby acknowledge the Receipt of One Hundred Guineas (105*l*.) paid to the credit of the said Council, into the Bank of Messrs. Jones Loyd and Co., London, by \_\_\_\_\_

\_\_\_\_\_ for a Right of Life Admission (not transferable) to the Lectures, Library, Museum, Observatory, Gardens, and Grounds, and for a copy of the published Transactions of Gnull College, which is hereby granted, subject to whatever Regulations the said Council may from time to time decide upon.

Number \_\_\_\_\_

Dated \_\_\_\_\_

Accountant \_\_\_\_\_



\_\_\_\_\_

} Members  
of the  
Council.

## LIST OF LOCAL SUPPORTERS.

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*The following Gentlemen of the neighbourhood have expressed their willingness to cooperate in the adaptation of Gnock Castle, in the Vale of Neath, to the purposes of a Practical and Scientific College:—*

C. R. MANSEL TALBOT, Esq., M.P., F.R.S., Lord Lieutenant of the County.

THE VERY REVEREND. W. A. CONYBEARE, Dean of Llandaff.

JOHN BIDDULPH, Esq., *Swansea*.

GEO. GRANT FRANCIS, Esq., F.S.A., *Cae Bailey, Swansea*.

THE REVEREND JOHN GRIFFITHS, Rector of Neath.

\*NASH EDWARDS VAUGHAN, Esq., *Rheola, Neath*.

\*MATTHEW MOGGRIDGE, Esq., *The Willows, Swansea*.

\*JOHN COKE FOWLER, Esq., *Merthyr*.

\*H. A. BRUCE, Esq., M.P., *Merthyr*.

\*THE RIGHT HONOURABLE THE EARL OF JERSEY.

\*ILTID THOMAS, Esq., *Glanmor, Swansea*.

\*THE REVEREND SAMUEL DAVIS, Rector of Oystermouth.

\*W. GILBERTSON, Esq., *Cwm Avon*.

\*G. BYNG MORRIS, Esq., *Sketty Park, Swansea*.

\*J. J. REES, Esq., *Killymeanllwyd, Llanelly*.

\*GRIFFITH LLEWELLYN, Esq., *Baglan Hall, Neath*.

\*THOMAS PENRICE, Esq., *Kilvrough*.

\*E. R. WOOD, Esq., *Stout Hall, Swansea*.

\*ILTID NICHOLL, Esq., *Usk*.

\*WALTER COFFIN, Esq., *Cardiff*.

\*L. L. DILLWYN, Esq., M.P., *Sketty Hall, Swansea*.

\*RICHARD BASSETT, Esq., *Bonvilstone, Cardiff*.

\*RICHARD HALL, Esq., *Baglan House, Neath*.

\*HOWEL GWYN, Esq., *Dyffryn, near Neath*.

\*HENRY THOMAS, Esq., *Llwyn Madoc, near Builth*, Chairman of the Glamorgan Quarter Sessions.

\*LORD VILLIERS.

\*D. LEWIS, Esq., *Strady, Llanelly*.

\*R. C. NICHOLL CARNE, Esq., *Nash Manor, Cowbridge*.

\*EVAN W. DAVID, *Radyr Court, Cardiff*.

THE RIGHT REVEREND CONNOP THIRLWALL, D.D., Lord Bishop of St. David's.

R. LASCELLES JENNER, Esq., *Wenvoe Castle*.

THE REVEREND JOHN GRIFFITH, *Vicarage, Aberdare*.

TOWNSHEND WOOD, Esq., *Swansea*.

RICHARD AUBREY, Esq., *Bellevue House, Swansea*.

J. T. JENKIN, Esq., *Swansea*.

GEORGE G. BIRD, Esq., M.D., *Swansea*.

THOMAS WILLIAMS, Esq., M.D., *Swansea*.

W. P. STRUVE, Esq., C.E., *Swansea*.

C. TENNANT, Esq., *Russell Square, and Cadoxton, Neath*.

H. TENNANT, Esq., *Lincoln's Inn, and Cadoxton, Neath*.

FREDK. CLARKE, Esq., *South Wales Railway*.

W. W. WAYNE, Esq., *Aberdare*.

MESSRS. MASON AND ELKINGTON, *Pembrey Copper Works, Llanelly*.

T. B. ESSERY, Esq., *Swansea*.

ALFRED TRUUMAN, Esq., *Bryn-y-Mor, Swansea*.

LLEWELLYN LLEWELLYN, Esq., *Ynispenllwch*.

J. W. JAMES, Esq., *Swansea*.

JOHN JENKINS, Esq., M.A., *Swansea*, Barington Lecturer on Political Economy, in Ireland, 1850.

\*SIR CHARLES MORGAN, BART., *Tredegar Park, Monmouthshire*.

\*H. H. VIVIAN, Esq., M.P.

\*SIR GEORGE TYLER.

\*PASCOE ST. LEGER GRENFELL.

REV. EDWARD B. SQUIRE, Vicar of Swansea.

\*R. FOTHERGILL, Esq., *Hensol Park*.

\*REAR-ADMIRAL WARDE, K.H., *Preswylfa*.

\*COLONEL TURBERVILLE, *Eweny Abbey*.

Those marked thus (\*) are Justices of the Peace.

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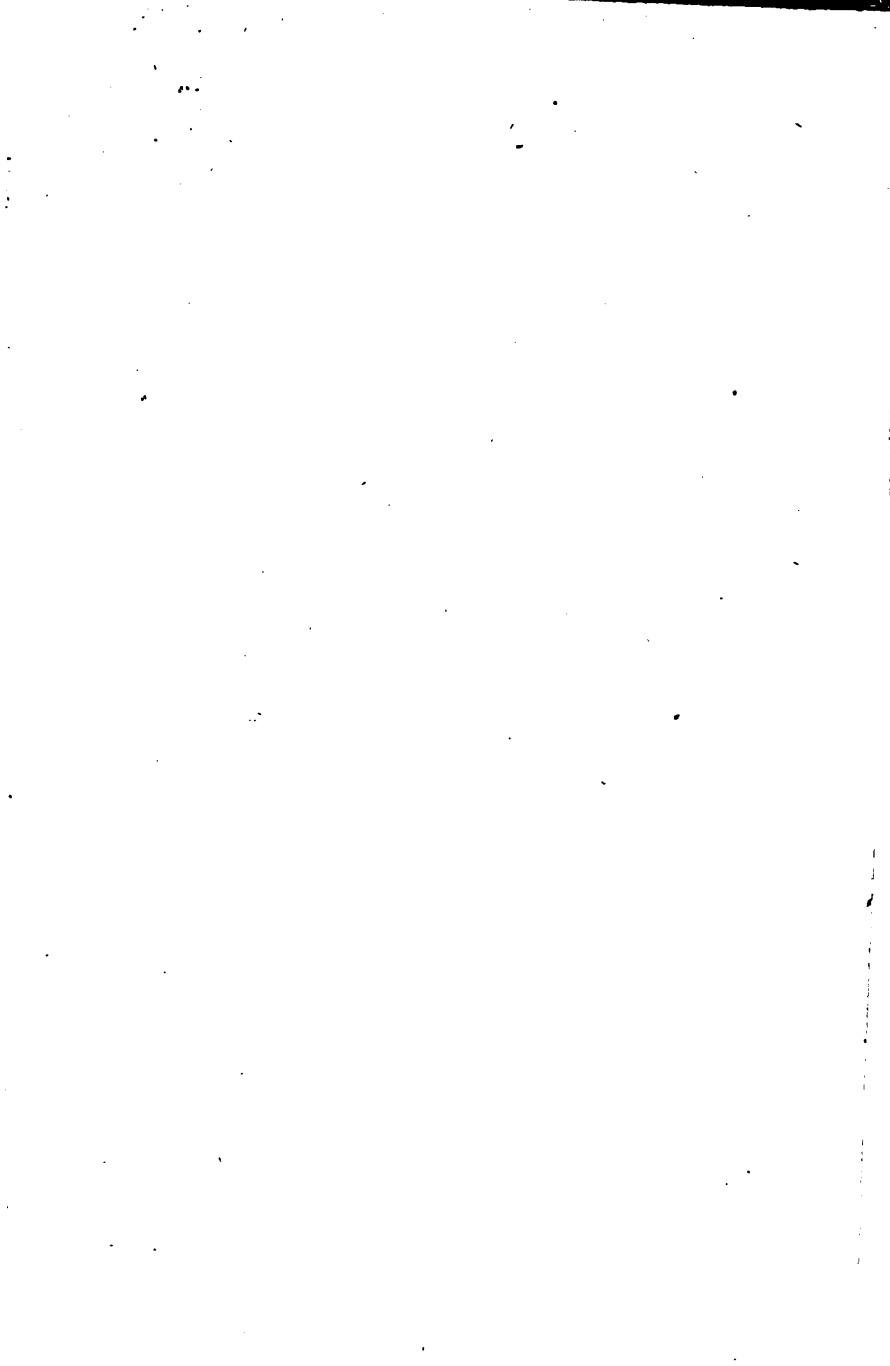
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